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ABSTRACT

The invention uncovers a complex polarizer system comprising an arrangement of three polarizing beam splitting layers P1,P2,P3 with their polarizing layer vectors V1,V2,V3. P1 and P2 are arranged such that a sub-beam transmitting P1 along an optical axis A1 is reflected at P2 because V1 and A1 span a plane which is normal to the plane spanned by V2 and A1; P3 is arranged such that a sub-beam being reflected by P1 from A1 into the optical axis A2 transmits P3 because V1 and A2 span a plane which is normal to the plane spanned by V3 and A2.

The congeneric processing of the two sub-beams (both go through a transmission and a reflection) eliminates the intrinsic asymmetries of simple polarizers with respect to purity and folding, and is a consequence of the described perpendicular crossing of planes ("cross-polarizer"). Coupling of cross-polarizers results in efficient arrangements of systems which operate with complementarily polarized radiation, e.g. 2-channel image display systems with polarization-rotating reflective spatial light modulators (e.g. Liquid Crystal on Silicon displays).